Electronic Version
Stylesheet Version v1.1.1

Claims

[c1] A fundus camera that enables both an eye fundus image and an anterior image to be viewed concurrently in focus comprising:
an objective lens for forming an eye fundus image at an image plane i1;
at least one light source for illuminating a fundus;
a reflective means for directing said at least one light source onto said fundus;
at least one condenser lens for directing said at least one light source onto said reflecting element;
an auxiliary lens disposed between said objective lens and said image plane i1 for forming an anterior image of an eye at said image plane i1, where said anterior image replaces a portion of said eye fundus image formed at said image plane i1;
an observation means for viewing an image formed at said image plane i1; and,
a photographic means for capturing said image.

[c2] The fundus camera of claim 1 wherein said auxiliary lens is laterally offset from an optical axis of said objective lens.

[c3] The fundus camera of claim 1 wherein at least one illumination stop is placed before said at least one condenser lens to restrict light from impinging upon said auxiliary lens.

[c4] The fundus camera of claim 1 further comprising retracting means for removing said auxiliary lens and said illumination stop when a photographic image is to be captured.

[c5] The fundus camera of claim 4 wherein said retracting means comprises a pivotally rotatable arm, rotatable to an extended position wherein said auxiliary lens is located between said objective lens and said image plane i1 and a retracted position wherein said auxiliary lens is not located between said object lens and said image plane i1 when said image plane i1 is to be utilized for a photograph.

[c6] The fundus camera of claim 1 wherein one or more alignment marks are projected onto an iris of said eye, such that said one or more alignment marks are visible in said anterior image of said eye wherein said one or more alignment marks can be seen to be aligned when a fundus camera is correctly positioned.

[c7] The fundus camera of claim 1 wherein a first position of

said auxiliary lens is coupled to a second position of a fundus camera focusing system such that said auxiliary lens moves substantially axially through a distance so as to maintain said anterior image in focus as focus of said eye fundus image is adjusted.

[c8] The fundus camera of claim 6 wherein said one or more alignment marks are projected onto an iris of said eye from non opposite positions such that a first mark moves over said iris of said eye substantially parallel to a first line as a fundus camera is moved towards said eye and a second mark moves over said iris of said eye at an angle aligned other than 180 degrees to a direction of movement of said first mark along said first line.

[c9] The fundus camera of claim 1 wherein said at least one light source comprises infrared light directed at said fundus of said eye and said observation means is capable of detecting infrared light.

[c10] The fundus camera of claim 1 wherein said photographic means comprises at least one photographic lens, a photographic plane and a photographic camera.

[c11] The fundus camera of claim 9 wherein said at least one light source further comprises visible light.

[c12] The fundus camera of claim 1 further comprising an illu-

mination device that is located in proximity to said objective lens, such that light eminating from said illumination device illuminates an anterior region of said eye such that light does not reflect back from a cornea of said eye so as to cause unacceptable transmission of light back towards said observation means.

[c13] The fundus camera of claim 1 wherein said observation means includes a reticule that is concentric with a pupil of said eye when observation is correctly aligned with respect to said eye, wherein said reticule facilitates correct alignment of said photographic means.

[c14] The fundus camera of claim 1 wherein said observation means further comprises an observation camera separate from said photographic means.

[c15] The fundus camera of claim 14 wherein said image plane i1 comprising at least one alignment target may be observed through said observation means, separate from said photographic means.

[c16] The fundus camera of claim 15 wherein an infrared light is used during alignment and focusing wherein said photographic means is capable of detecting infrared light during an alignment phase by removal of some or all infrared filters typically coupled to a digital colour photo-

graphic camera.

[c17] A method of operating a fundus camera that enables both an eye fundus image and an anterior image to be viewed concurrently in focus comprising:
inserting an auxiliary lens between an objective lens and an image plane i1 for forming an anterior image of an eye at said image plane i1, where said anterior image replaces a portion of an eye fundus image formed at said image plane i1;
focusing said objective lens; and,
focusing said auxiliary lens.

[c18] The method of claim 17 further comprising:
removing said auxiliary lens from between said objective lens and said image plane i1; and,
photographing a fundus.